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Rumford River Monitoring Project

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Rumford River Monitoring Project

Norton, MA

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Slides created by:

Environmental Science D period class

- Sampling site: Route 123 in Norton, MA.
- Following data was collected:
 - Temperature
 - Dissolved Oxygen
 - Phosphorus
 - Nitrogen
 - Flow rates

Taunton River Watershed

Areas within the watershed include:

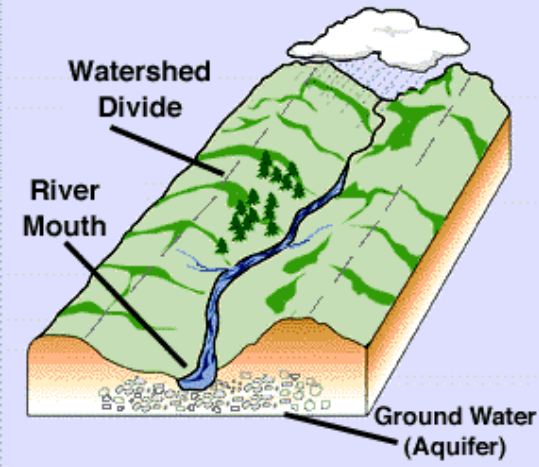
Abington, Attleboro, Dighton, East Bridgewater, Hanson, Holbrook, Pembroke, Plainville, Stoughton, Avon, Berkley, Bridgewater, Brockton, Carver, Easton, Fall River, Foxboro, Freetown, Halifax, Kingston, Lakeville, Mansfield, Middleboro, Norton, Plympton, Raynham, Rehoboth, Rochester, Sharon, Somerset, Swansea, Taunton, West Bridgewater, Whitman, and Wrentham

Impacts to Water Quality:

- Growing population
- Increased development
- Overuse of water supplies
- Pollution
- Failed septic systems



A Watershed



Watershed

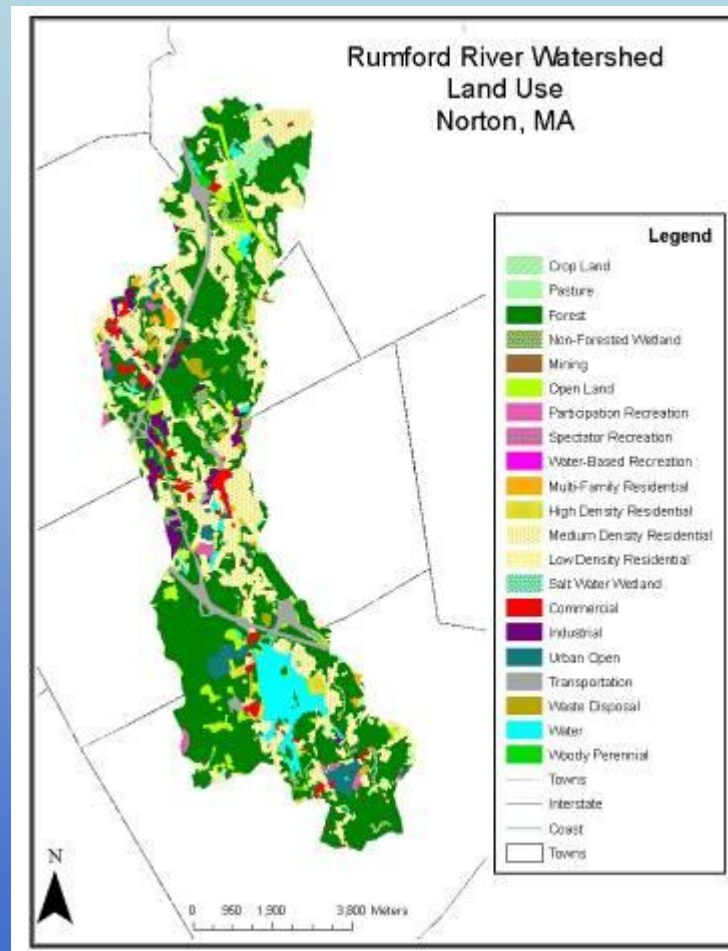
- A watershed is an area of land that drains to one point. Also it can be an area where precipitation falls and is caught and drained into rivers, marshes, or streams.

- One of the most important aspects of watersheds is that land affects the water quality for all communities living downstream.

Land use around the Rumford River

- Land surrounding the Norton Reservoir is highly developed with residential housing
- Most housing developments use septic systems for waste treatment.
- Three major road systems are located in a close proximity to the Norton Reservoir and the Rumford River: Route 495, Route 123, and Route 140.

Land Use Map



Imperviousness

- Imperviousness is a measurable amount of rain water that cannot seep into the ground.
- Hard surfaces such as rooftops, buildings, roads, and parking lots are the cause of imperviousness.
- Watersheds with high levels of imperviousness can show a decrease in water quality.

Run off

- Run off- precipitation, snow melt, or irrigation water that appears in uncontrolled surface streams, rivers, drains or sewers.
- Run off from impervious surfaces can carry pollutants, such as nitrogen and phosphorus into streams and rivers. These excess nutrients have the potential to degrade water quality.



Riparian Corridors

- Riparian corridors = the vegetation that grows along the banks of rivers.
- Healthy, vegetated riparian zones improve water quality by:
 - preventing erosion by stabilizing the soils of river and stream banks
 - filtering out contaminants like nitrogen and phosphorus. These contaminants are trapped by plant roots.
 - providing shade and keeping water temperatures cool.

Results

- Range of
Temperature(deg.C) 17.64- 16.91
- Range of D.O.(mg/l) 7.07 – 4.79

Results:

- Discharge of water (L/day) 0.07
- Phosphorus load (g/day) 3.87
- Nitrogen load (g/day) 8.36

Analysis

Water temperature does not fluctuate because samples were collected between 4pm and 5am. Water was not affected by the warming of the sun.

Dissolved oxygen levels decrease because photosynthesis, which adds O_2 to the water, occurs during the day. Cell respiration, which uses oxygen, continues throughout the night, decreases O_2 levels.

Analysis

- Phosphorus levels were below detection limits. Phosphorus does not significantly impact water quality of the Rumford River.
- Nitrogen levels were detected. Potential sources of nitrogen could be septic systems from residences, fertilizers from lawns, and fertilizers from the TPC of Boston golf course located near the reservoir.